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already indicated, is absolutely essential to this great problem.

And I am not without hope that the engineer will qualify for this work. There are many indications that their ideas are stirring in the minds of forward-looking men. At the last election Mr. James Hartness, well known as an engineer and inventor, was elected to the Gubernatorial chair of the State of Vermont, an honor, so far as I know, that has never before been conferred upon an engineer. And it was with the greatest satisfaction and pleasure that engineers, not only in this country, but elsewhere, viewed the selection of Mr. Herbert Hoover as Secretary of Commerce. These are pioneer workers in a field hitherto controlled by the lawyer and the politician, and their progress will be watched with the keenest interest and sympathy by all engineers. Of the success of their mission no engineer has the slightest doubt, for we are well aware that these men will bring to the problems of state the methods that have enabled the engineer to subdue nature and build up civilization.

Can there be any question that back of a movement as great as this we need an all-embracing Society of Engineers; a society whose business it will be to foster the solution of the great problems of industry which are the problems of the engineer. The functions of such a society will differentiate sharply from those of an individual society in that as before stated, the individual society is more likely to deal with service to the individual. This society is organized for service to the nation. It is a challenge to national service. There is no question in my mind that it has a bright future and is worthy of the support of engineers of all kinds and in all places.

#### PLAGIARISMS

THERE have been published in recent numbers of *SCIENCE*<sup>1</sup> communications from correspondents more or less involving the interest

<sup>1</sup> *SCIENCE*, January 14, 1921; February 11, 1921; March 4, 1921.

which revolves around what we are apt to call plagiarism. They are concerned for the most part with matters of not very serious import in scientific circles and the communications are marked by courtesy and good humor. These amiable features are sometimes absent in the more earnest and specialized realms of research and the whole subject is only too often conducive to unfortunate and wearying controversy and to permanent and deplorable enmities between the best of men and those least likely, one would think, knowingly to rob a fellowman of credit for original work. One not himself drawn into the heat of such conflicts is often led to believe that a more thorough understanding of some of the implications and correlations, a more just appreciation of the numerous underlying springs which move the human mind would modify it. A more constant keeping in view the history of science, a realization of how numerous are the expositions of facts, before the world becomes attentive even to the most obvious of them, would cause these deplorable incidents to become less frequent. The character of the recent outbreak in *SCIENCE* was mild and it was devoid of bitterness, as most incidents are which present such examples of the humor and worldly common sense of the participants, as these communications do. The chances of unfortunate consequences being remote it is perhaps an opportune time to say something of the broader aspects of the subject of plagiarism.

Its wide affiliations are best appreciated in an analysis of the underlying principles to which I have referred. Many will be disposed to criticize what may seem the too wide significance I give to the term. Many look upon it only as one of evil import. However, it is easier to expand its usual limitations a little than to find or invent a name which after all would only here and there overlap the commonly accepted outlines of the usual term.

Its most sinister acceptation interests us but little. When a man affixes his name to a long essay or a book which another man has written it would perhaps be better to call it thievery. I remember one such instance

occurring many years ago. I only introduce reference to it here because I am reminded that in defense of the quite undeniable fact there was advanced an explanation which sometimes, in less flagrant cases, has to be seriously considered. The culprit when convicted pleaded that he had imbibed the author's ideas from lectures he had heard him deliver and essays of his he had read, so that when he came to write these unconsciously flowed from his pen. This too is one of the implications of plagiarism, but alas! in this particular instance it was a question not of ideas—these were in no way notable—but of two or three thousand words repeated in the same sequence, certainly a monstrous accomplishment for the subconscious. With this aspect of plagiarism I am not here concerned, as I am not writing on the underlying causes of crime.

Where indeed shall we draw the line between a peccadillo and crime? At a not very remote period in the past there was no patent law, no copyright, far less any code punishing purloining even of words to say nothing of ideas. There seems only comparatively recently to have arisen a public opinion condemning such transgressions. They were once scarcely censurable. In the time of the Renaissance there was an entirely different point of view. Their equivalent for research was then the digging up of buried treasure out of ancient literature. This was so universal that it seemed a sort of affectation to be bringing in allusions to the derivation even of transliterations from ancient authors, forcing on the reader, as it were, the recognition that the writer was accurately and intimately acquainted with ancient models. It was taken for granted of any idea or incident that some Aristotle or Plato or Pliny had originated or transmitted it. Why bore the reader by continually reminding him of it? Indeed such impatience occasionally becomes vocal in the modern reader from this annoyance. Among the ancient authors Pliny was the only one who grouped his references in separate bibliographical categories. He alone, so far as I know, in his "Natural History"

went about the matter in a way that approaches our systematic bibliographies, and he took good care to save the reader from the weariness of continual textual indications of the sources of his astounding statements. Any story, however good, any lesson, however valuable, any humor, however infectious it otherwise would be, is apt to evaporate under less careful supervision. The literature of the subject is what the rushed researcher to-day first skips, the details next and the "conclusions," least of all. The form of a modern research article at best is a grisly horror. I do not know if the man has been born yet who can avoid bibliography, details and conclusions, and yet have his essay stand forth in shining attractiveness in its exposition of original work in science. One sometimes wishes to be born again when that blessed time is a reality. It is therefore hardly fair to group the conventional essay of modern science with real literature. The real masters of science sometimes approach it; they very rarely indeed attain it.

But in order to pursue our inquiry into the nature of plagiarisms, it is in general literature for the most part we must seek our illustrations. When Molière wrote his comedy "Le Médecin Malgré Lui," he put in the mouth of his own characters the discourse, found in Rabelais, of Panurge, as to the man who had married a mute wife. It is not worth while to pursue the joke further backward, as we shall find other illustrations easily enough, but those who saw Joe Jefferson play "Rip van Winkle" in Boucicault's adaptation of Irving's tale will remember the soliloquy of Rip on the mountain as to the vision of a happy married life, excited by the contemplation of the mute dwarfs he met there. Petrarch furnished Molière with other scenes, not the ideas alone but a considerable stretch of word for word translation. I have traced this back, not quite so literally perhaps, to Pliny and evidently through him to Pindar. The ancient Greek legends represent the complaint of Zeus finding practical executive attention in the smiting of Æsculapius for transgressing the permissible limi-

tations of his art when he resurrected the dead. Later the complaint of Pliny and Petrarch also was that the doctors took unethical liberties with their opportunities. Pindar, Pliny, Petrarch, Molière, even Dr. Rabelais himself by inference, lash the doctors with the bitterest invectives for transgressions, some of which we admit to-day are daily committed against the ethics of the profession. It becomes stereotyped in Pliny, Petrarch and Molière.

Whether well done or badly done it is always paid alike. . . . A shoemaker in making a pair of shoes can't spoil a piece of leather without paying for it, but at this business when we spoil a man it does not cost us a cent.

Even Socrates has the same jibe put in his mouth by Plato, and to this Petrarch manages to allude, but to our unwritten modern ethical standards it is all flagrant plagiarism. As to medicine much of this continual abuse of it in ancient and modern satire is due to the underlying vice in its social regulation. It is the sole one of human activities wherein its practitioners are admonished, nay forced so far as possible, to work directly against their own material interests. No punishment is too severe, if we could only get at him, for the criminal who tries to further his commercial interests by the unnecessary worry and botheration to a patient, whom nature is better able to treat than the doctor. Is there any doubt of the occasional justification for such complaint? What is there against the other impostors of commerce? For them such conduct is ethical business. As for medical men attempting to stimulate their business by setting plagues agoing, that is unthinkable. Indeed the evolution of public health preservation is making daily more clear the anomaly of this age-long status of practitioners of medicine, and daily one sees more or less abortive attempts in the direction of change. Now the underlying cause of all this plagiarism in the satires and jibes against the doctors is the broad one of maladjustment of a certain social agency. It is the continued protest of society, falling into fairly narrow channels of expression it is true, but

it is also true that no one censures Molière or Petrarch, or ever did censure them for using ancient jokes and jibes as their own.<sup>2</sup>

Now the thread that runs through the stories of the effect wrought on the layman's mind by comparing the ideas aroused by viewing for the first time other worlds than ours through the telescope is that which the preacher seizes to emphasize the glory of God and the insignificance of man, whom he has created. That has been dinged into the consciousness of countless generations of men, ever more insistently, as modern science has made it more and more manifest. The suggestion of a parity becomes daily more grotesque. This grotesqueness finds frequent issue in words and it is not difficult to imagine that even the words are closely similar, when the humor of the thought strikes the same spot in the observer's mental machine.

Let me take a more concrete example. Does any one suppose that when Mark Twain wrote the extremely amusing dialogue in *Tom Sawyer Abroad* between Nigger Jim and the hero he was plagiarising Pliny? The former had a poor opinion of painters. One of them "was paintin' dat old brindle cow wid de near horn gone—you knows de one I means. . . . He say when he git her painted de pictur's worth a hundred dollars. Mars Tom, he could a got de cow for fifteen." So Pliny's barbarian Gaul with the long hair, when at Rome was asked on his glancing at a masterpiece of an old slave leaning on his staff what he would give for it in cash. "I would not give a farthing even for the slave"<sup>3</sup> was his contemptuous reply. It is apparent that such a joke is always lying close to the surface through all the ages since man made his drawings on the walls of the dark caves at Altamira and that is the way with the joke about the stars.

Lawyers are always writing to the astronomers for knowledge of when the moon might

<sup>2</sup> "Ancient jibes at the doctors," *New York Medical Record*, September 12, 1903.

<sup>3</sup> Pliny, "*Historia Naturalis*," Liber XXXV., 8 Ed., Silling, Vol. V., p. 211.

have revealed or when it could not have revealed crime to the night-wandering witness. There is nothing remarkable that Lincoln should have cornered his witness as well as Alcibiades by a device that lay near the surface ever since man became a sublunar biped. But neither is there anything remarkable, indeed I believe the biographies assert it as fact, that Lincoln in his youth was a reader of Plutarch's lives, possibly of Chamber's "Book of Days" too, where one can meet with the same tale. At any rate the stories always amuse, when first met with, and wherever met with often instruct. They should not be suppressed by uncharitable charges of plagiarism, because it does not seem worth while, even if the charge is correct, to spoil the story and wipe out its humor by the introduction of clumsy and pedantic references.

The interest in anthropological problems as well as in those of ethnology is so specialized and within their own lines is so absorbing that the light psychology might throw on them has been somewhat neglected—very much so until very recently. And yet Tylor's ground thought was that psychology plays a large part in anthropology even if the human mind is everywhere *ab initio* of the same nature. He, or some of his followers at least, are not even disposed to allow as much fundamental differentiation as they apply to the shape of the skull or that of the nose. However that may be they have compelled us to acknowledge that it reacts very much in the same way to the same environment and the same stimuli and this places us at once in view of the link, some may think rather tenuous, which attaches ethnology to plagiarism. I hope with the expansion I have given to that term, in what has preceded, this is at least discernible. I tried once to show<sup>4</sup> that, starting with primitive man's idea of disease etiology, the demons of disease became those of heresy or their first cousins, and inasmuch as a good purge was a good way to get rid of disease

<sup>4</sup> "The Demons of Heresy and the Demons of Disease in the Processes of Thought," *New York Medical Journal*, February 23, 1918.

devils, so it was also for false doctrine, vile thoughts, evil emotions, pride, jealousy, injustice. So early and so firmly bound together in this channel in all the languages of modern civilized races became the association that "purge" still persists in them all as applied to mental and religious and legal categories ages after the devils of disease had disappeared from medicine, a quite grotesque and absurd correlation between widely different concepts in modern thought. One stares with surprise, both in Pliny<sup>5</sup> and in Schoolcraft's<sup>6</sup> account of American Indians, at the menstruating woman going around crops naked at night to chase away the vermin from the corn, or was it in both cases some fertility rite that was observed and misinterpreted? We are scarcely less astonished to find the plumed serpent in American aboriginal religion more or less closely paralleling that of the Asiatic. I do not know if any hooded snake may have existed or may still exist in America to account for this detail of coincidence, very astonishing unless we think of the same environmental influences in India and America. We get no trace of the deadliness of anything resembling that of the cobra as having ever moved the mind of man in America to stand in awe before its power and worship it. But whether the American savage brought the plumed snake from eastern Asia in medicine bundles across the Straits of Behring or across the Pacific or whether his imagination created the coincidence, still we see two of the principles prominently associated with plagiarism here in this distant ethnological territory brought into play. One is the persistence with which the mind moves in channels once entered, the other is the promptness with which it enters those channels once it is placed in a certain environment. I fancy this exemplification torn with some violence from a foreign field is helpful in making us realize how the tendency to plagiarism is one deeply, immutably rooted

<sup>5</sup> Pliny, "Historia Naturalis," Liber XXVIII., Ed. Sillig, Vol. IV., p. 277.

<sup>6</sup> Schoolcraft, Henry R., "The Indian Tribes of the United States," Part 5, p. 70.

in the human mind and though some may be disposed to say this is nothing but another word for original sin, I am sure most will rather be disposed to believe that a very large amount of the so-called plagiarism can be traced to sources quite outside the volitions and intentions of the transgressor.

Notwithstanding this, some may consider, extremely charitable view which we should all take when confronted with evidence that seems a little disconcerting at times, it behooves us all, when we think we have a bright new idea, or a brand new joke, or a bit of new truth laboriously unearthed in research, to search our inner consciousness as well as our environment for the origin of it. At any rate worldly wisdom should teach us not too rashly to forget the precaution of leaving the way open for the claims of others which we may have unintentionally overlooked.

JONATHAN WRIGHT, M.D.

#### CONSERVATION CONFERENCE ON RESOURCES OF INTERIOR WATERS

As indicated by a recent preliminary announcement, Hon. Herbert Hoover, secretary of Commerce, has called a conference at the Fisheries Biological Station, Fairport, Iowa, June 8-10, 1921, for consideration of the conservation of resources of interior waters.

Acting under instructions from Mr. Hoover, the Committee on Organization and Plans has prepared the following outline of the scope and character of the conference.

It is assumed that our water courses, our lakes and ponds not only should serve as avenues of transportation, and channels for removal or reservoirs for storage of surplus surface drainage, but should also continue to provide food and other necessities of life and to furnish the means of essential recreation. It is evident that, with growth in population and with progressive industrial development, the public waters are becoming decreasingly fit to serve these latter ends. It is important, then, to ascertain if the decline in usefulness of the waters is inevitable, and, if it is not, to discover and apply the means of bringing

about improvement. There is a certain community of interest among groups (anglers, commercial fishermen, sanitary engineers and others) that are commonly conscious only of special interests, but as yet there has been no unity of purpose, no concert of effort to serve a common interest. It is certain that the accomplishment of the purpose of each group is conditioned, not only upon public sympathy and support, but upon the cooperative service of scientists representing biology, chemistry and physics, and engineers representing sanitation, hydrology and navigation.

That the conference now called should be as constructive and practical as possible, it is proposed to concentrate attention upon the following principal topics: (1) the depletion of fish and shellfish, its causes and possible remedies; (2) the preservation, value and appropriate utilization of swamp and shore areas; (3) the organization of effort to secure an early beginning upon a constructive program of betterment.

It is believed that the conference may be most effective in accomplishing its ends if it be the occasion, not for a few special addresses, but rather for informal and free discussion from every point of view. It is proposed that on each day there shall be two sessions, morning and afternoon, respectively, with ample intervals between sessions for personal interviews, demonstrations or recreation. Opportunity will be afforded in the evening for special meetings to disclose topics of interest to particular groups or to all. As no talk is expected to exceed ten minutes, opportunity is allowed for the most open discussion. Following is the outline of program:

Wednesday, June 8. 10 A.M. and 2 P.M.

Subject: Depletion of aquatic resources, causes and remedial measures (including principles rather than details of legislative protection). Discussion from the standpoint of the sportsman, the commercial fisherman, the dealer or manufacturer, the biologist, the fish-culturist and the sanitary engineer.

Wednesday evening is left open for special topics arising in course of the discussion of the day.